DARAFILL®

Controlled low strength material performance additive

Product Description

DARAFILL® Controlled Low Strength Material (CLSM) Performance Additive produces a cementitious material that is highly flowable, volume stable and excavatable in the future. DARAFILL® is a viscous solution of organic compounds used in cementitious backfill mixtures. By developing a stable-air matrix in the CLSM mixture, DARAFILL® improves flowability and reduces the required amount of mix water up to 50%, compared to a water-based CLSM. DARAFILL® is packaged in an inert wax capsule that releases its contents during the mixing action in large volume mixers. DARAFILL® is also available in bulk. DARAFILL® capsules contain 90mL of admixture.

Applications

The use of DARAFILL® CLSM Performance Additive produces a low water content CLSM that is primarily used to improve flowability, lower densities, eliminate segregation and settlement, and control strength development in applications where future excavation is required. DARAFILL® is designed to be used with cement, and pozzolans such as ASTM grade fly ash and ground blast furnace slag. The addition of DARAFILL® is a cost-effective alternative to a water-based CLSM mixture, and CLSM is a cost-effective alternative to soil backfill.

Performance

The addition of DARAFILL® CLSM Performance Additive generates stable air contents of 15 to 30% and significantly reduces mix water requirements by as much as 50% when compared to water-based CLSM. When used as recommended, DARAFILL® enhances plastic and hardened properties of CLSM accordingly:

- Provides a CLSM which is highly flowable with no segregation.
- Controls strength development for future excavatability, usually in the range of 0.35 to 1.40MPa depending on the application requirements.
- Increases yield of materials up to 30%.
- Provides densities in the range of 1,440 to 1,920kg/m^3.
- Aids pumpability and minimises segregation in pump between loads. Pre-job testing with actual equipment and intended configuration is strongly recommended.
- Reduces buoyancy problems in CLSM around embedded pipes and tanks when compared to water-based CLSM.

DARAFILL® CLSM Performance Additive and CLSM Applications

DARAFILL® CLSM Performance Additive is designed for CLSM mixtures and is not recommended for use in conventional concrete. DARAFILL® CLSM offers the following benefits:

- Safe, efficient, non-corrosive fill material for trenches, tanks and pipes.
- Self-leveling and high lateral flow fills for trenches, undercuts and voids.
- Cost-effective in comparison to compacted soil by increasing efficiency of labour and equipment.
- Flexible, mix designs to suit requirements.
- Minimises settlement in comparison to compacted-soil backfill.

Specification

Material for backfill operations shall be cementitious Controlled Low Strength Material mixtures as supplied by concrete producer and contain DARAFILL® CLSM Performance Additive, as manufactured by GCP Applied Technologies. Mixture ingredients and proportions shall be submitted for approval. DARAFILL® CLSM Performance Additive shall be added by the concrete producer personnel as per manufacturer's recommendations.

Storage, Addition Rate, Dispensing and Mix Designs

DARAFILL® CLSM Performance Additive capsules have a storage tolerance in the temperature range of 0 °C to 55 °C. Store DARAFILL® above freezing, away from heat sources and out of direct sunlight.

Addition rates are typically one 90mL capsule per m^3 of CLSM. In some mixes additional capsules may be required, i.e. up to 2 capsules per m3.

For large projects DARAFILL® bulk is available. Dose rates will be 500 - 1,000mL / m^3 depending on optimum result required.

The DARAFILL® CLSM Performance additive capsules are added in their entirety to the CLSM load.

For premix truck batching best results are achieved by tossing the capsules against the bottom of the truck hopper to ensure breakage and then washing down. DARAFILL® should be added directly into barrel after the CLSM load is batched. Use only 70% water in this step. High speed mixing to occur for 5 minutes, followed by water balance to obtain final CLSM.

CLSM with DARAFILL® reached optimum consistency when the mixture reaches a creamy, flowing appearance.

For central mix operations, add DARAFILL® capsules into the central mixer and not into trucks so as to ease discharge from central mixer.

Health and Safety

See DARAFILL® CLSM Material Safety Data Sheet or consult GCP Applied Technologies.

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Last Updated: 2025-05-13
gcpat.com.au/solutions/products/darafill-0